

1 We claim:

- 1 1. A method to control access to logical volumes disposed in an information
2 storage and retrieval system, comprising the steps of:
3 providing an information storage and retrieval system comprising a plurality of
4 logical volumes;
5 providing a plurality of host computers, wherein each of said plurality of host
6 computers is capable of communicating with said information storage and retrieval
7 system;
8 forming (N) host computer groups;
9 assigning one or more of said plurality of host computers to the (i)th host
10 computer group, wherein (i) is greater than or equal to 1 and less than or equal to (N);
11 forming (N) logical volume groups, wherein (N) is greater than or equal to 1;
12 assigning one or more of said plurality of logical volumes to the (i)th logical
13 volume group, wherein (i) is greater than or equal to 1 and less than or equal to (N);
14 maintaining a database associating the (i)th host computer group with the (i)th
15 logical volume group;
16 permitting each of said one or more host computers assigned to the (i)th host
17 computer group to access each logical volume comprising said (i)th logical volume
18 group;
19 wherein each of said plurality of host computers assigned to (i)th host computer
20 group is not assigned to any other of the (N) host computer groups, and wherein each of

21 said logical volumes assigned to the (i)th logical volume group is not assigned to any
22 other of the (N) logical volume groups.

1 2. The method of claim 1, wherein one or more of said (N) host computer
2 groups are owned by a first person, and wherein one or more of said (N) host computer
3 groups are owned by a second person, wherein said first person differs from said second
4 person.

1 3. The method of claim 1, further comprising the step of providing a storage
2 area network, wherein said storage area network is capable of communicating with said
3 information storage and retrieval system and with each of said plurality of host
4 computers.

1 4. The method of claim 1, further comprising the steps of:
2 forming a plurality of unique identifiers;
3 assigning a different one of said plurality of unique identifiers to each of said
4 plurality of host computers;
5 associating in said database each of said plurality of unique identifiers with one of
6 said (N) host computer groups.

1 5. The method of claim 4, further comprising the steps of:
2 requesting by one of said plurality of host computers to access a designated
3 logical volume;
4 determining that said requesting host computer is assigned to the (j)th host
5 computer group, wherein (j) is greater than or equal to 1 and less than or equal to (N);

6 determining if said designated logical volume is assigned to the (j)th logical
7 volume group;
8 operative if said designated logical volume is assigned to the (j)th logical volume
9 group, permitting said requesting host to access said designated volume;
10 operative if said designated logical volume is not assigned to the (j)th logical
11 volume group, denying said requesting host access to said designated volume.

1 6. The method of claim 5, further comprising the steps of:
2 establishing the unique identifier assigned to said requesting host computer;
3 determining that the requesting host computer is assigned to the (j)th logical
4 volume group.

1 7. The method of claim 1, further comprising the steps of:
2 receiving a request to assign one or more host computers to the (k)th logical
3 volume group, wherein (k) is greater than or equal to 1 and less than or equal to (N);
4 assigning said one or more host computers to the (k)th logical volume group.

1 8. The method of claim 1, further comprising the steps of:
2 receiving a request to unassign one or more host computers from the (k)th logical
3 volume group, wherein (k) is greater than or equal to 1 and less than or equal to (N);
4 unassigning said one or more host computers to the (k)th logical volume group.

1 9. The method of claim 1, further comprising the steps of:
2 receiving a request to unassign one or more logical volumes from the (k)th logical
3 volume group, wherein (k) is greater than or equal to 1 and less than or equal to (N);

4 unassigning said one or more logical volumes from the (k)th logical volume
5 group.

1 10. The method of claim 1, further comprising the steps of:
2 receiving a request to assign one or more logical volumes to the (k)th logical
3 volume group, wherein (k) is greater than or equal to 1 and less than or equal to (N);
4 assigning said one or more logical volumes to the (k)th logical volume group;
5 assigning identifiers to said one or more logical volumes newly-assigned to the
6 (k)th logical volume group.

1 11. An article of manufacture comprising a computer useable medium having
2 computer readable program code disposed therein to control access to logical volumes
3 disposed in an information storage and retrieval system, wherein said information storage
4 and retrieval system comprises a plurality of logical volumes, and wherein a plurality of
5 host computers is capable of communicating with said information storage and retrieval
6 system, the computer readable program code comprising a series of computer readable
7 program steps to effect:

8 forming (N) host computer groups, wherein (N) is greater than or equal to 1;
9 assigning one or more of said plurality of host computers to the (i)th host
10 computer group, wherein (i) is greater than or equal to 1 and less than or equal to (N);
11 forming (N) logical volume groups;
12 assigning one or more of said plurality of logical volumes to the (i)th logical
13 volume group, wherein (i) is greater than or equal to 1 and less than or equal to (N);

14 maintaining a database associating the (i)th host computer group with the (i)th
15 logical volume group;

16 permitting each of said one or more host computers assigned to the (i)th host
17 computer group to access each logical volume comprising said (i)th logical volume
18 group;

19 wherein each of said plurality of host computers assigned to (i)th host computer
20 group is not assigned to any other of the (N) host computer groups, and wherein each of
21 said logical volumes assigned to the (i)th logical volume group is not assigned to any
22 other of the (N) logical volume groups.

1 12. The article of manufacture of claim 11, wherein one or more of said (N)
2 host computer groups are owned by a first person, and wherein one or more of said (N)
3 host computer groups are owned by a second person, wherein said first person differs
4 from said second person.

1 13. The article of manufacture of claim 11, wherein a storage area network is
2 capable of communicating with each of said plurality of host computers, said computer
3 readable program code further comprising a series of computer readable program steps to
4 effect receiving information from said storage area network.

1 14. The article of manufacture of claim 11, said computer readable program
2 code further comprising a series of computer readable program steps to effect:

3 forming a plurality of unique identifiers;

4 assigning a different one of said plurality of unique identifiers to each of said
5 plurality of host computers;

6 associating in said database each of said plurality of unique identifiers with one of
7 said (N) host computer groups.

1 15. The article of manufacture of claim 14, said computer readable program
2 code further comprising a series of computer readable program steps to effect:
3 receiving from one of said plurality of host computers a request to access a
4 designated logical volume;
5 determining that said requesting host is assigned to the (j)th host computer group,
6 wherein (j) is greater than or equal to 1 and less than or equal to (N);
7 determining if said designated logical volume is assigned to the (j)th logical
8 volume group;
9 operative if said designated logical volume is assigned to the (j)th logical volume
10 group, permitting said requesting host to access said designated volume;
11 operative if said designated logical volume is not assigned to the (j)th logical
12 volume group, denying said requesting host access to said designated volume.

1 16. The article of manufacture of claim 15, said computer readable program
2 code further comprising a series of computer readable program steps to effect:
3 establishing the unique identifiers assigned to said requesting host computer;
4 determining using said database and said unique identifiers that the requesting
5 host computer is assigned to the (j)th logical volume group.

1 17. The article of manufacture of 11, said computer readable program code
2 further comprising a series of computer readable program steps to effect:

3 receiving a request to assign one or more host computers to the (k)th logical
4 volume group, wherein (k) is greater than or equal to 1 and less than or equal to (N);
5 assigning said one or more host computers to the (k)th logical volume group.

1 18. The article of manufacture of claim 11, said computer readable program
2 code further comprising a series of computer readable program steps to effect:

3 receiving a request to unassign one or more host computers from the (k)th logical
4 volume group, wherein (k) is greater than or equal to 1 and less than or equal to (N);
5 unassigning said one or more host computers to the (k)th logical volume group.

1 19. The article of manufacture of claim 11, said computer readable program
2 code further comprising a series of computer readable program steps to effect:

3 receiving a request to unassign one or more logical volumes from the (k)th logical
4 volume group, wherein (k) is greater than or equal to 1 and less than or equal to (N);
5 unassigning said one or more logical volumes from the (k)th logical volume
6 group.

1 20. The article of manufacture of claim 11, said computer readable program
2 code further comprising a series of computer readable program steps to effect:

3 receiving a request to assign one or more logical volumes to the (k)th logical
4 volume group, wherein (k) is greater than or equal to 1 and less than or equal to (N);
5 assigning said one or more logical volumes to the (k)th logical volume group;
6 assigning identifiers to said one or more logical volumes newly-assigned to the
7 (k)th logical volume group.

1 21. A computer program product usable with a usable with a programmable
2 computer processor having computer readable program code embodied therein to control
3 access to logical volumes disposed in an information storage and retrieval system,
4 wherein said information storage and retrieval system comprises a plurality of logical
5 volumes, and wherein a plurality of host computers is capable of communicating with
6 said information storage and retrieval system, comprising:
7 computer readable program code which causes said programmable computer
8 processor to form (N) host computer groups, wherein (N) is greater than or equal to 1;
9 computer readable program code which causes said programmable computer
10 processor to assign one or more of said plurality of host computers to the (i)th host
11 computer group, wherein (i) is greater than or equal to 1 and less than or equal to (N);
12 computer readable program code which causes said programmable computer
13 processor to form (N) logical volume groups;
14 computer readable program code which causes said programmable computer
15 processor to assign one or more of said plurality of logical volumes to the (i)th logical
16 volume group;
17 computer readable program code which causes said programmable computer
18 processor to maintaining a database associating the (i)th host computer group with the
19 (i)th logical volume group;
20 computer readable program code which causes said programmable computer
21 processor to permit each of said one or more host computers assigned to the (i)th host

22 computer group to access each logical volume comprising said (i)th logical volume
23 group.

1 22. The computer program product of claim 21 wherein one or more of said
2 (N) host computer groups are owned by a first person, and wherein one or more of said
3 (N) host computer groups are owned by a second person, wherein said first person differs
4 from said second person.

1 23. The computer program product of claim 21 wherein a storage area
2 network is capable of communicating with each of said plurality of host computers,
3 further comprising computer readable program code which causes said programmable
4 computer processor to receive information from said storage area network.

1 24. The computer program product of claim 21, further comprising:
2 computer readable program code which causes said programmable computer
3 processor to form a plurality of unique identifiers;
4 computer readable program code which causes said programmable computer
5 processor to assign a different one of said plurality of unique identifiers to each of said
6 plurality of host computers;
7 computer readable program code which causes said programmable computer
8 processor to associate in said database each of said plurality of unique identifiers with
9 one of said (N) host computer groups.

1 25. The computer program product of claim 21, further comprising:

2 computer readable program code which causes said programmable computer
3 processor to receive from one of said plurality of host computers a request to access a
4 designated logical volume;

5 computer readable program code which causes said programmable computer
6 processor to determine that said requesting host is assigned to the (j)th host computer
7 group, wherein (j) is greater than or equal to 1 and less than or equal to (N);

8 computer readable program code which causes said programmable computer
9 processor to determine if said designated logical volume is assigned to the (j)th logical
10 volume group;

11 computer readable program code which, if said designated logical volume is
12 assigned to the (j)th logical volume group, causes said programmable computer processor
13 to permit said requesting host to access said designated volume;

14 computer readable program code which, if said designated logical volume is not
15 assigned to the (j)th logical volume group, causes said programmable computer processor
16 to deny said requesting host access to said designated volume.

1 26. The computer program product of claim 25, further comprising:

2 computer readable program code which causes said programmable computer
3 processor to establish the unique identifier assigned to said requesting host computer;

4 computer readable program code which causes said programmable computer
5 processor to determine using database and said unique identifier that the requesting host
6 computer is assigned to the (j)th logical volume group.